CLAIMS:

What is claimed is:

1   1.   A method of producing an ink-spread compensated variant of an existing optical

2   code encodation scheme comprising the steps of:

3   determining a pattern of printed areas and spaces in the existing encodation scheme for a

4   data input; the printed areas and spaces each having a respective length in at least one dimension

5   as a function of a given unit length for encoding information; and

6   adding a predetermined length to the length of each space while the length of each

7   printed area remains unchanged to produced a modified code symbol.

1   2.   The method according to claim 1, wherein the existing optical code encodation

2   scheme is a binary code encodation scheme.

1   3.   The method according to claim 2, wherein the existing binary code encodation

2   scheme is for an existing binary code symbology.

1   4.   The method according to claim 1, wherein the existing optical code encodation

2   scheme is a bar code encodation scheme.

1   5.   The method according to claim 4, wherein the existing bar code encodation

2   scheme is for an existing bar code symbology.

1   6.   The method according to claim 4, wherein the bar code encodation scheme

2   encodes a bar code having bars of varying lengths and spaces of varying lengths at least equal to

3   a length of a narrowest space, and wherein the predetermined length is a function of the length of

4   the narrowest space.

1   7.   The method according to claim 6, wherein the bar code is an n,k bar code and

2   wherein the predetermined length is a function of a module width of the resulting bar code

3   symbol.

1   8.   The method according to claim 7, further comprising adding auto-discrimination

2   to the modified code symbol to enable a reader to determine that the modified code symbol is an

3   ink-spread compensated variant for the decoding thereof and the amount of added length to each

4   space.

1   9.   The method according to claim 7, wherein the predetermined length is x modules,

2    $0 < x \leq 2$.

1   10.   The method according to claim 9, wherein the predetermined length is 0.5

2   modules.

1   11.   The method according to claim 9, wherein the predetermined length is 1 module.

1   12.   The method according to claim 7, wherein the n,k bar code is an 11,3 bar code

2   having bars and spaces with respective lengths varying from 1 to 4 modules.

1   13.   The method according to claim 12, wherein the predetermined length is x

2   modules, $0 < x \leq 2$.

1   14.   The method according to claim 13, wherein the predetermined length is 0.5

2   modules.

1   15.   The method according to claim 13, wherein the predetermined length is 1 module.

1   16.   The method according to claim 1, wherein the encodation scheme encodes a two-

2   dimensional code symbology.

1   17.   The method according to claim 16, wherein the wherein the two-dimensional code

2   symbology is an n,k bar code and wherein the added predetermined length is a function of a

3   module length of the resulting bar code code symbol.

1   18.   The method according to claim 17, wherein the bar code is PDF417.

1   19.   The method according to claim 1, further comprising the steps of:

2   dividing the encodation scheme into at least a first and a second set of data characters;

3   and

4   the step of determining selecting the pattern from the second set, the different characters

5   in the first and second sets providing an autodiscrimination feature to identify an ink-spread

6   compensated code symbol.

1   20.   The method according to claim 1, further comprising the step of adding at least

2   one auto-discrimination feature to the modified code symbol to enable a reader to determine that

3   the modified code symbol is an ink-spread compensated variant for the decoding thereof.

1   21.   The method according to claim 20, further comprising the step of adding a data

2   character pattern to the modified code symbol to identify the modified code symbol as an ink-

3   spread compensated variant.

1   22.   The method according to claim 20, wherein code symbols generated according to

2   the existing optical code encodation scheme have an existing first start pattern and an existing

3   first stop pattern, the step of adding auto-discrimination comprising at least one of

4   (a) using a second start pattern in place of the existing first start pattern in the modified

5   code symbol, and

6   (b) using a second stop pattern in place of the existing stop pattern in the modified code

7   symbol.

1   23.   The method according to claim 20, wherein code symbols generated according to

2   the existing optical code encodation scheme have a first finder pattern and wherein the step of

3   adding auto-discrimination comprises providing a second finder pattern in the modified code

4   symbol in place of the first finder pattern.

1   24.   In a method for decoding an ink-spread compensated variant of an existing n,k bar

2   encodation scheme produced in accordance with claim 23, the improvement comprising the steps

3   of:

4   discriminating that the bar code symbol is an ink-spread compensated variant and

5   determining the amount of the added length;

6   normalizing the width of a character to add the total added length;

7   and varying the threshold for the spaces to compensate for the length added thereto.

1   25.   An ink-spread compensated n,k bar code symbology comprising characters

2   having k bars and k spaces of varying lengths, the length of each bar being from 1 to m modules,

3   the length of each space being from 1+x to m+x modules, $0<x\leq2$, and wherein the overall length

4   of each character is n+kx modules.

1   26.   The symbology according to claim 25, wherein the n,k bar code is an 11,3 bar

2   code wherein the bars and spaces are from 1 to 4 modules in length.

1   27.   The symbology according to claim 26, wherein x is 0.5 modules.

1   28.   The symbology according to claim 26, wherein x is 1 module.

1   29.   An uncompensated bar code symbology and related an ink-spread compensated

2   symbology;

3   the uncompensated bar code symbology comprising a set of uncompensated patterns of

4   bars and spaces, each uncompensated pattern encoding a respective value, the length of each bar

5   and space being from 1 to m modules;

6   the ink-spread compensated symbology comprising a set of compensated patterns of bars

7   and spaces, each compensated pattern encoding a respective value and corresponding to an

8   uncompensated pattern encoding the respective value, the lengths of the bars in the compensated

9   pattern equaling the lengths of the bars in the corresponding uncompensated pattern, the lengths

10   of the spaces in the compensated pattern equaling the lengths of the spaces in the corresponding

11   uncompensated pattern value plus x modules, x>0.

1   30.   The symbology of claim 29, wherein $x \leq 2$.

1   31.   The symbology of claim 29, wherein the uncompensated bar code symbology

2   comprises a first start pattern and the compensated bar code symbology comprises a second start

3   pattern different from the first start pattern.

1   32.   The symbology of claim 31, wherein:

2   x=1.5 modules;

3   the first start pattern comprises a first bar two modules in length and a first space three

4   modules in length;

5   the second start pattern comprises a first bar two modules in length and a first space 2.5

6   modules in length.

1   33.   The symbology of claim 31, wherein:

2   x=2 modules;

3   the first start pattern comprises a first bar two modules in length and a first space three

4 modules in length;

5   the second start pattern comprises a first bar two modules in length and a first space four

6 modules in length.

1   34.   The symbology of claim 29, wherein the uncompensated bar code symbology

2 comprises a first stop pattern and the compensated bar code symbology comprises a second stop

3 pattern different from the first stop pattern.

1   35.   The symbology of claim 34, wherein:

2   x=1.5 modules;

3   the first stop pattern comprises a bar/space sequence b1-s1-b1-s1-b2-s1-b1-s1; and

4   the second stop pattern comprises a bar/space sequence b1-s1.5-b1-s1.5-b2-s1.5-b4-s1.5;

5   where "bi" represents a bar i modules in length and si represents a space i modules in

6 length;

7   the first and second stop patterns each followed by a terminating bar between one to four

8 modules in length.

1   36.   The symbology of claim 34, wherein:

2   x=2 modules;

3   the first stop pattern comprises a bar/space sequence b1-s1-b1-s1-b2-s1-b1-s1; and

4   the second stop pattern comprises a bar/space sequence b1-s1.5-b1-s1.5-b2-s1.5-b2-s5;

5   where "bi" represents a bar i modules in length and si represents a space i modules in

6   length;

7   the first and second stop patterns each followed by a terminating bar between one to four

8   modules in length.

1   37.   An uncompensated bar code symbology and related an ink-spread compensated

2   symbology;

3   the uncompensated bar code symbology comprising a first set patterns of bars and spaces,

4   the length of each bar and space in patterns in the first set being from 1 to m modules;

5   the compensated bar code symbology comprising a second set of patterns of bars and

6   spaces, the length of each bar in patterns in the second set being from 1 to m modules; the length

7   of each space in patterns in the second set being from $1+x$ to $m+x$ modules; and where

8   the sum of the lengths of the bars in each respective pattern in the first set being one of an

9   even or odd number of modules, and the sum of the lengths of the bars in each respective pattern

10   in the second set being the other of an even or odd number of modules.

1   38.   The symbology of claim 37, wherein the uncompensated bar code symbology

2   comprises (11,3) data characters of Code 128 where the sum of the lengths of the bars is an even

3   number of modules; and

4   the compensated bar code symbology comprises $(11+3x,3)$ Code 128 data characters

5   where the sum of the lengths of the bars is an odd number of modules.